

## IBM OS/2 Warp Server, Version 4; IBM OS/2 Warp Server Advanced, Version 4; IBM LAN Server for Macintosh, Version 1.01 Offer Complete Server Software Solutions

Whether you are adding a new server to an existing network or stepping into the world of client/server computing, IBM has a complete server software solution for virtually any business application.

**OS/2® Warp Server or OS/2 Warp Server Advanced** is a complete network operating system with the functions and features you need for an advanced application server platform. It's a perfect fit for small- and medium-sized businesses, departmental workgroups, or large corporations and institutions.

OS/2 Warp Server works with just about every server and client on the market. Your investment in existing hardware and software is secure. It will work transparently with other servers, including those running Novell NetWare, Microsoft Windows† NT, or IBM AIX®. Native TCP/IP support lets you make it a key part of your Internet solution.

OS/2 Warp Server provides a powerful application server foundation with integrated file and print sharing, sophisticated yet easy-to-use systems management, backup and recovery, remote connection, advanced printing, LAN Internet access, and an easy-to-use and infinitely customizable GUI.

OS/2 Warp Server helps you increase overall productivity by putting all the resources you need — files, printers, peripherals, and applications — right at your fingertips. Its remote connection services give you full, secure access to the LAN from home or the road. Its advanced printing services give you access to virtually any type of printer, including PostScript and non-PostScript printers, as well as high-speed host printers. OS/2 Warp Server Advanced includes additional productivity features: HPFS386, fault tolerance, and enhanced Pentium optimization.

Once installed, OS/2 Warp Server provides unparalleled systems-management control. Administrators can get detailed information about any system on the network. They can use OS/2 Warp Server to track the performance of networked systems. And if users are having problems with their systems, OS/2 Warp Server will even allow your administrator to look directly at their users' screens and operate their systems — all without leaving the help desk. It's the fastest way to get your employees back to work.

Also, announced is **LAN Server for Macintosh\*\*, Version 1.01**, a complementary product to OS/2 Warp Server. While maintaining the functionality contained in Version 1, enhancements have been made to installation, configuration, and reliability.

| Description                                         | OTC*   |
|-----------------------------------------------------|--------|
| OS/2 Warp Server, Version 4 CD                      | \$ 629 |
| OS/2 Warp Server Advanced, Version 4 CD             | 1,299  |
| OS/2 Warp FirstStep CD                              | 829    |
| IBM LAN Server for Macintosh, Version 1.01 Diskette | 299    |

**Planned Availability Date:** February 27, 1996

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### IN BRIEF . . .

OS/2 Warp Server is a complete server software solution for all sizes of businesses. Benefits of OS/2 Warp Server and OS/2 Warp Server Advanced include:

- ◆ Enables concurrent access to files, applications, printers, and modems — from a single LAN server
- ◆ Saves time and money by providing all the software you need to introduce network technology to your business
- ◆ Allows choice of services on your server using flexible, integrated installation process
- ◆ Uses intuitive GUI to make configuration, administration, and network management easy
- ◆ Ensures compatibility with new servers added to your network and your existing network hardware and software, including Novell NetWare and Microsoft Windows NT
- ◆ Allows management of your network — and almost any system connected to it — either from the LAN or a remote location
- ◆ Provides full, secure access to your LAN and all the resources on it from any location
- ◆ Allows multiple server applications to run on a single machine using OS/2 Warp's proven multitasking capabilities
- ◆ Provides Internet services with enhanced TCP/IP support
- ◆ Provides all the server/client software needed to install a 10-user network with FirstStep edition

**For ordering, contact:**  
Your IBM representative, an IBM Authorized Business Partner, or IBM Direct at

**800-IBM-CALL**

Reference: YE001

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## OS/2 Warp Server, Version 4

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OS/2 Warp Server, Version 4 contains the following major components and functions:

- OS/2 Warp Version 3.0
- File and print-sharing services
- Simple integrated installation
- Remote LAN access
- Systems management capabilities
- Enhanced communications including TCP/IP — Dynamic IP
- Server backup and recovery
- Advanced LAN printer functionality
- Application server support

### OS/2 Warp Version 3.0

OS/2 Warp Version 3, now available with OS/2 Warp Server, Version 4, continues the OS/2 tradition of providing 32-bit OS/2, DOS, and Windows software support, enabling you to take full advantage of the power of your PC while preserving your investment in application programs. As a stable, mature platform, OS/2 Warp is positioned to set the standard for ease-of-use and productivity in the worldwide PC industry.

### File and Print Sharing Services

OS/2 Warp Server, Version 4 provides the resource sharing capabilities that you would expect in a world-class network operating system. Its industry-leading performance allows you to easily support your department or your entire company. OS/2 Warp Server allows your clients (DOS, Windows, OS/2 Warp, Windows 95, Windows NT) to transparently access network files and printers.

OS/2 Warp Server's enhanced GUI allows your LAN administrators, whether at a central site or in the department, to tailor and manage your network resources as easily as dragging and dropping an icon.

**NetWare File and Print Gateway:** The OS/2 Warp Server NetWare Client for OS/2 Version 2.11 acts as a NetWare File and Print Gateway so that OS/2 Warp Server clients can use OS/2 Warp Server to access NetWare servers even if they are not running with the NetWare LAN protocols.

The NetWare Client for OS/2:

- Supports both NetWare 3 and NetWare 4 servers
- Offers remote program load (RPL) workstation access
- Supports NetWare SFT III (system fault tolerance) for both client and SPX
- Provides access for up to nine parallel ports
- Supports OS/2 and DOS/Windows private and global sessions and VMBoot private and global sessions for NetWare 3

NetWare Client for OS/2 includes the following utility programs:

- CX
- LOGIN
- MAP
- NLIST
- NWTOOLS
- Printing from your OS/2 workstation (including NPRINT)

### Simple Integrated Installation

Getting started with OS/2 Warp Server has never been easier. OS/2 Warp Server's wide-ranging functionality is derived from many components, which, in previous environments, represented individual products with individual installations. In OS/2 Warp Server, all those major functions have been combined within a single, newly designed install shell that presents a consistent approach. It is targeted for the novice or experienced user. Among the features of the install process are:

- A printed manual, *Up and Running*, is included in the package to point you in the right direction initially and to act as a reference later, if needed.
- A basic option menu for first-time users to install OS/2 Warp Server by answering a minimum of questions.
- An advanced option menu for users who want to tailor their configuration to specific needs. For this option, all or any combination of the total menu items may be selected. A hierarchical approach is used whereby major groupings are projected first (for example, File and Print Services), followed by individual functions within the major grouping (for example, Network SignOn Coordinator).
- Configuration responses are collected during this process and checked for accuracy and consistency.
- Installation may be local to the installing system or performed remotely across the LAN. Client functions are often installed on one or more remote systems.
- After installation, icons are created for each of the functions installed; these functions can be started by simply clicking on the icon.

The design objective of OS/2 Warp Server is that it be intuitively easy to install and use. All components have been designed (and in some cases re-designed) to conform to the latest IBM standards for end-user consistency and clarity. Initial reaction from some beta users confirms that the objectives have been achieved.

OS/2 Warp Server provides the platform upon which the IBM Software Servers for OS/2 Warp are installed. The key advantage that OS/2 Warp Server provides over existing LAN server products is the integrated installation of the Software Servers such as the Communications Server, Database Server, Internet Connection Server, and Transaction Server.

### Remote Access Services

The Remote Access Services provided in OS/2 Warp Server extend the "Office LAN" to remote users. Using dial connections (asynchronous, synchronous, ISDN, or X.25 PAD), remote users can access LAN (Ethernet or token-ring) resources as if they were physically connected to the LAN.

The server capabilities provide the security and routing functions for the Remote Access Clients. Support is provided for LAN workstations to dial off the LAN and connect to Remote Access Clients, to another OS/2 Warp Server, or to a LAN Distance™ Connection Server Version 1.1. The Remote Access Services support multiple simultaneous remote connections. The number of connections depends on the PC hardware, communications adapter, and type of remote connectivity. For example, using four Star Gate Avastar 200 Asynchronous Communications Adapters in a 486 66MHz PC, up to 64 simultaneous asynchronous communications sessions can be supported.



Provided with OS/2 Warp Server are two Remote Access Clients that allow an OS/2- or Windows-based client to dial into the LAN and access network resources. These Remote Access Clients provide transparent access for most LAN applications.

In addition, the Remote Access Clients allow one Remote Access Client workstation to connect to another Remote Access Client workstation and establish a virtual LAN. This could be used to allow file and print sharing between two workstations using peer networking products such as OS/2 Warp Connect Peer services or Artisoft LANtastic.

### **Systems Management Services**

A comprehensive set of systems management functions for the PC environment, which includes SystemView, is provided to help lower the cost of systems ownership. Key functions are:

- Proactive system monitoring
- Hardware and software inventory
- Software distribution
- Remote workstation control
- Event scheduling
- Asset management
- Automated alert actions
- License management

Benefits that contribute to the success of a company's business include:

- A comprehensive set of features for performing essential business, change, configuration, operations, performance, and problem management tasks — all in one package
- A single point of control from an OS/2 workstation for managing your distributed system environment
- Investment protection of your existing IBM and non-IBM hardware and software
- Facilities for sharing and protecting information in an heterogeneous and distributed environment

In detail, the following functions are available for OS/2 2.1, or later, Windows 3.1, Windows 3.11, and Windows for Workgroups:

#### **Network Workstation Discovery**

Automatically discover networked workstations and organize them into logical groups to help simplify management tasks.

#### **Workstation Hardware Inventory**

Detect and report detailed information of a wide variety of systems, including adapters, SCSI devices, disk drives, memory, I/O devices, and more. Log this data into a flat file, DB/2, or a Lotus Notes database.

#### **Workstation Software Inventory**

Discover and collect software information on a system.

#### **Workstation Monitoring**

View statistics on workstation performance, status, threshold settings, and monitoring activities. Trigger alert from changes to workstation hardware, Predictive Failure Analysis™ of hardware problems, and other conditions.

#### **Remote Workstation Control**

Control or monitor workstations remotely, view/edit system files, transfer files, and execute programs.

#### **Scheduling**

Free up your busy system administrator by scheduling events such as software distribution, system reboot, and inventory during off hours to minimize disruption, system down time, and lost user productivity.

#### **Security**

Control each remote workstation "service" individually by a userid and password.

#### **Alert Manager**

Process alerts locally on the workstation where the alert was generated or centrally at the manager. Automatically execute a command or script, log the alert, pop up a message, convert the alert to an SNMP trap, or forward the alert to another manager.

#### **System Profile**

Enter administrative information about each network workstation, such as name of workstation user, phone number, and department.

#### **License Management**

Ensure compliance with software licensing agreement according to the established company policy. Provide the means to monitor and control use of license-enabled applications (that have been enabled for License Use Management).

#### **Software Distribution**

Distribute and install both CID- and non-CID-enabled applications. CID is an IBM-specified way to install and configure products on, or remove products from, remote workstations and hosts while keeping user interactions with the product to a minimum.

#### **Software Distribution Preparation**

Use easy interface for CID response file and packages preparation.

#### **Application Sharing**

Allow LAN users to access and run applications installed on an applications server.

### **Enhanced Communications including TCP/IP — Dynamic IP**

OS/2 Warp Server is supported by a significantly enhanced communications subsystem known as Adapters and Protocols Services, which consists of four parts:

- CID Utilities
- Adapter Drivers
- Protocol Support
- TCP/IP Services

The CID Utilities are the same as those provided in previous LAN server transports.

- Service Installable File System (SRVIFS) — provides a file redirection facility on a LAN for the CID environment that enables client access to a code server, and, consequently, access to installation diskette images.

- LAN CID Utility (LCU) — enables the Multi-protocol Transport Services (MPTS) installation diskette images to be installed and configured at a client workstation from a code server and supports the installation of other OS/2 CID-enabled products.



Adapter driver support is constantly being extended. Other vendors' adapters certified for conformity to the NDIS interface are supported either with drivers shipped with the transport or provided by the vendor. To obtain a list of supported adapters from CompuServe or the Internet, refer to **Compatibility**.

For protocol support, NetBIOS continues to be available. Also, the BSD 4.3 Sockets API and associated TCP/IP protocol are included for users who require the many public domain applications available or who want to gradually migrate to TCP/IP networks. New applications can be written to this 32-bit Sockets API and used natively on TCP/IP or NetBIOS networks, both LANs and WANs. TCP/IP Services is further dramatically enhanced by the introduction of "Dynamic IP."

TCP/IP support is provided for Internet's request for comment (RFC) 1001/1002, which allows the use of NetBIOS applications — including File and Print Sharing Services and OS/2 File and Print Client — over TCP/IP. Users may, therefore, change their LANs to TCP/IP and link them to a TCP/IP WAN and run server/client across the combined network, as well as other legacy NetBIOS and new Sockets applications. Enhancements have been made to contain the NetBIOS broadcasts on the LAN to manageable proportions.

TCP/IP Services provides Dynamic IP, which simplifies both IP host network access and IP network administration and overcomes many of the inherent weaknesses of traditional IP networks. Consequently, Dynamic IP facilitates smooth network operation and change. It is also well suited for supporting the networking of mobile hosts. Dynamic IP utilizes only open standard networking technologies. Therefore, Dynamic IP hosts are fully compatible with and fully interoperate with existing IP network hosts.

Benefits of Dynamic IP include:

- "Automatic" IP network access

Dynamic IP hosts — those hosts with IBM Dynamic IP client software installed — automatically configure themselves to access IP networks without requiring predefined information about the network addressing scheme or the availability of routers or name servers at the point of network attachment. Hosts are now free to move about the network and attach at arbitrary points without user or administrator intervention. Dynamic IP also enables other hosts in the network to locate Dynamic IP hosts at their current points of attachment by maintaining always-current host name to IP address mappings in the Domain Name System (DNS). This "follow-me" feature of Dynamic IP is well suited for laptops and other mobile computers.

- Simplified IP network administration

Dynamic IP greatly simplifies the job of assuring that IP hosts are configured for current network operation. It does this by providing configuration information about a network and its hosts from a central server. Because the current manual process of reconfiguring hosts on a network is tedious, time-consuming, error-prone, and, in some cases, disruptive to network operations, Dynamic IP can save administrators significant time, energy, and risk in instituting changes in IP networks. Further, because Dynamic IP hosts maintain their own DNS mapping in a new, dynamic DNS server, those DNS server entries become "self-maintaining," thus reducing administrator's workload even further.

- Compatibility

Dynamic IP supports current Bootstrap Protocol (BootP) clients, Dynamic Host Configuration Protocol (DHCP) clients and servers, and DNS resolvers and servers. Similarly, Dynamic IP DNS servers "plug" seamlessly into existing DNS server hierarchies within enterprises. Further, Dynamic IP hosts use existing network routing infrastructures and require only that BootP relay agents be present on those subnets where a Dynamic IP server is not present. These relay agents, sometimes called "BootP helpers," are widely available in today's IP router products.

- Extendibility

Dynamic IP can be extended to include user-definable data and programs in ways that simplify the administration of these customer-specific application environments in the same way it simplifies the administration of IP networking environments.

- Open Standards

Dynamic IP reflects IBM's ongoing commitment to the use of open networking standards. All protocols employed by Dynamic IP conform to TCP/IP standards generated by IETF working groups and specified in official IETF RFCs and Internet drafts.

Other standard protocols used are:

- DHCP

DHCP provides a framework for passing configuration information to hosts on a TCP/IP network. DHCP is based on the BootP, adding the capability of automatic allocation of reusable network addresses and additional configuration options. DHCP captures the behavior of BootP relay agents, and DHCP participants can interoperate with BootP participants.

- Dynamic DNS (DDNS)

Today's DNS servers support only queries on a statically configured database. The Dynamic DNS protocol defines extensions to the DNS to enable those servers to accept requests to update the DNS database dynamically. These extensions provide support for adding and deleting a set of names and associated resource records within a single zone automatically. DNS security extensions featuring fail-safe RSA digital signature technology are used to authenticate hosts that request to enter or change entries in the DDNS server database. IBM is the first company to introduce products that support DDNS and associated DNS security extensions.

Multiple TCP/IP applications supported:

- PING
- DHCP
- Web Explorer
- Ultimap Lite
- Gopher Client
- News Reader/2
- Telnet PM
- PMANT
- FTPPM
- LPR/LPD
- SNMP
- PPP (Client)

### **Backup and Recovery Services**

No one disputes the requirement for making periodic backups of vital data to guard against the possibility of minor machine failures or catastrophic disasters. This applies particularly to data on the server that may be shared by and affect multiple users.



OS/2 Warp Server's Backup and Recovery support for the server makes these tasks easy and, if required, largely automatic. Services provided include:

- Backup and recovery of files and Access Control Lists (ACLs).
- Backup can be planned ahead of time to include all files, specified files, or just those files that have changed since last time.
- Backups can be scheduled to take place automatically at given times or frequencies, even if other work is taking place at the time.
- Manual backups can be taken at any time.
- Storage devices supported: diskette, SCSI tape, read/write optical, hard disk, or LAN (Alias), plus remote-mounted drives and ADSM services. Refer to **Hardware Requirements** for a complete list of supported backup media.
- Backed-up data may be compressed at densities two to one or greater; and the procedures manage the volumes created, relieving the user of the need to do this.
- The support comes with an innovative design that includes a strikingly easy-to-use GUI with drag-and-drop technology that integrates into the OS/2 Warp Server desktop.
- Sounds in the form of .WAV files may be associated with any system event, providing you with the ability to audibly describe them.
- Files may be restored by simply clicking on the ones desired — the rest is automatic.
- For disaster recovery you can build a bootable set of diskettes to fully recover OS/2 Warp Server and all its files and ACLs for many of the supported media.

In short, the backup and recovery support is flexible, easy, and largely automated. There are no more excuses for being unable to access vital data.

### ***Advanced Print Services***

Advanced Print Services, based on the PSF™/2 program product, brings host-like printer support to the LAN, including support for PostScript documents on selected non-PostScript printers.

Advanced Print Services provides the following capabilities:

- Support for up to 16 printers simultaneously, ranging from 4 to 300 impressions per minute.
- Seamlessly print output on a variety of printers connected to the Server, including AFP™ printers, HP LaserJet, and compatible printers.
- Support for the most popular input application datastreams including PostScript, HP-PCL, and AFP.
- Convert PostScript Level 1 + 2 into PCL for printing on native PCL printers (no PostScript support required in printer). Take advantage of new PostScript level 2 applications without upgrading your printers.
- Convert PostScript or PCL for printing on native AFP printers at speeds up to 300 ppm with full error recovery. Since PostScript processing is done by Advanced Print Services, not in the printer, it will print most PostScript files faster on a non-PostScript printer, saving time and money.

- Change printers without changing the print driver.
  - Add, change, or reconfigure printers without affecting end users.
- Fully manage jobs sent from OS/2 and DOS/Windows workstations.
  - Easily re-route print files from one printer to another.
- The AFP data stream is the defacto standard datastream for high-speed printing and is supported by most high-speed printer vendors. AFP is a highly efficient, multi-use datastream, providing a single file format for printing, viewing, and archiving. Users will realize 3x and more file size reduction with many applications when compared to PostScript or PCL. OS/2 Warp Server is the only PC server that fully supports AFP and provides utilities to easily create AFP print files from your existing applications.
- Take advantage of the advanced AFP job management capabilities such as accounting, auditing, and page-level error recovery. Advanced Print Services provides the most complete set of error recovery and printer resource management capabilities available.
- With appropriate SNA host connections installed on the OS/2 Warp Server, submit print jobs in PostScript, HP-PCL, or AFP from OS/2 Warp Server clients to AFP printers on remote 390 MVS® and VM host systems.
- With the Client Access product installed on the OS/2 Warp Server, submit print jobs in PostScript, HP-PCL, or AFP from OS/2 Warp Server clients to AFP printers on remote OS/400® systems.

Advanced Print Services also supports PostScript, HP-PCL, and HP-PGL files in passthrough mode, permitting end users to send all print files to a single printer destination. An administrator can configure Advanced Print Services to reroute jobs directly to the proper local queue or port and avoid unnecessary processing when the application datastream is supported by the printer. Note that PostScript printers are only supported in passthrough mode.

**Note:** TCP/IP attachment capability is included in OS/2 Warp Server for AFP/IPDS™ printers.

### ***Application Server Support***

OS/2 Warp Server significantly enhances the application-serving capabilities of the NOS. Not only can LAN users access and use applications stored on the server, but the administration of applications both on the server and on individual workstations is much facilitated. Some of the services provided (through the System Management Services component) include:

- **Software Preparation:** A GUI is available for setting up software for distributing to end users. Distribution can be automatic or made available to selected clients to download on request to OS/2 and Windows clients.
- **Software Maintenance:** The discovery functions can automatically detect and record the application software installed with each end user together with its maintenance level. Procedures can be set up to prepare for updates as appropriate.
- **Software Distribution:** The capability is provided to perform distribution in cooperation with the related Domain Manager Change Control function on either an automatic or on-request basis.



- **License Management:** A tool is provided to allow administrators to monitor the use of enabled software packages to ensure that the license conditions are not being abused.

The effect of these functions is to provide a more complete, consistent, efficient, and cost-saving approach to application sharing. Control rests with the administrator who is in a much better position to ensure that all users are provided for easily and effectively.

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## OS/2 Warp Server Advanced, Version 4

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OS/2 Warp Server Advanced, Version 4 extends the function provided in OS/2 Warp Server, Version 4 by including:

- High Performance File System (HPFS386)
- Fault tolerance — mirroring and duplexing
- Enhanced Pentium optimization
- Disk limit administration

Descriptions of these additional features and functions follow.

- **High Performance File System (HPFS386)** — This is a non-FAT file system and provides a higher level of performance than OS/2's HPFS. The HPFS supports partition sizes up to 64GB. The HPFS gets the most performance out of the server machine, protecting your hardware investment.
- **Fault Tolerant** — The RAID 1 implementation, available for HPFS partitions, allows for the mirroring of disks to provide backup in the event of a system problem. Hot-swappable disks in a disk array are supported, provided they are supported by the hardware. Uninterrupted power supply (UPS) systems are supported for momentary power outages. Additional RAID 0-5 support is available through additional products. OS/2 Warp Server Advanced supports high availability in the event of a hardware or power failure.
- **Enhanced Pentium optimization** — OS/2 Warp Server Advanced takes advantage of high-performance hardware servers, protecting your investment in Pentium-equipped hardware.
- **Disk Limits** — Allows the administration of limits on server disk resources at the subdirectory level to insure users do not exceed their authorized allocation of file space. Thresholds can be set to notify a user prior to exceeding the limit. By setting appropriate limits, a user who might use all the server's disk space will be controlled and will be the only user experiencing an apparent out-of-space condition. Without disk limits, all users would receive an "out of disk space" or "disk full" message with this previous scenario. Disk limits provided by OS/2 Warp Server Advanced, Version 4 provide DASD control by the LAN administrator, reducing disk-full errors.

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## Additional Functions Available on Separate CD

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Included with the OS/2 Warp Server product on a separate CD are the following tools:

- NetWare to OS/2 Warp Server Migration Utility
- Hewlett-Packard (HP) Network Printer Support
- Lexmark Network Printer Support
- AskPSP

- SNMP and DMI Agents for SystemView®
- Mobile File Sync
- Software Registration Tool (Axtive)

These tools are designed to enhance usability. Descriptions of these tools follow.

### Novell NetWare to IBM LAN Server Migration Utility:

The NetWare to LAN Server Migration Utility assists users who want to migrate from a NetWare 2.x or 3.x network operating system to IBM's 32-bit OS/2 LAN Server 3.0, 4.0, and OS/2 Warp Server. It allows users to migrate as much or as little information as desired. Moreover, resources added to the LAN Server can be defined as aliases long before the actual migration takes place. Users and groups and their descriptions can be migrated, and access rights will be at least equivalent to those defined on the NetWare server. There are two migration paths. The first is non-destructive, which will allow you to set up a test environment without affecting your production NetWare file server. The second offers you the capability to directly migrate an existing NetWare file server when additional hardware is not available for more robust testing.

### HP and Lexmark Network Print Utilities:

- JetAdmin for OS/2 LAN Server by Hewlett-Packard

JetAdmin enables you to easily install, configure, query, and troubleshoot network-attached HP printers from your OS/2 Warp desktop. JetAdmin is fully integrated with OS/2 Warp, the Enhanced OS/2 Warp Spooler, and OS/2 LAN Server. This integration provides users with a standard view of printer and jobs status through the OS/2 printer object in the OS/2 Workplace™ Shell. Furthermore, JetAdmin is a Workplace Shell® application that is launched from the OS/2 printer object. This provides a consistent "look and feel" that significantly enhances the usability of the solution.

This solution allows you to:

- Support HP network-attached printers that are connected using token-ring or Ethernet.
- See the actual status of your print jobs throughout the printing process.
- Receive true end-of-job notification. No more wasted trips to the printer!
- See the actual status of the printer. You can view this status using your OS/2 printer objects or through the JetAdmin GUI.
- Remotely monitor, configure, and manage your HP network-attached printer through the JetAdmin GUI.
- Reduce network traffic by centralizing control and setup of your network-attached printers on an OS/2 Warp Server print server. You can also control access to your network-attached printers by using OS/2 Warp Server's security services.
- View the capabilities of your network-attached printers using the JetAdmin GUI.
- Assign up to 32 HP network-attached printers to an OS/2 Warp Server print server.
- Manage your HP network-attached printers using IBM's NetView®.
- Restart your print job after the last page successfully printed in the event of a printer error. This saves valuable printer resources,



such as paper and toner, and speeds throughput since users do not wait for a large print job to be completely reprinted.

- Specify a range of pages to print in a print-ready document. For example, submit a 100-page PostScript file to print and then choose to only print pages 10 to 20 rather than the entire document.
- Conveniently access and set up network ports for HP network-attached printers from the OS/2 printer object.

HP JetAdmin features vary depending on the level of functionality of the HP JetDirect print server or the peripheral devices. HP JetAdmin fully supports the functions of the advanced network printing solution in OS/2 Warp Server for all printers that are highlighted above.

This solution makes you more productive by giving you the tools to remotely manage network-attached printers from your OS/2 Warp desktop. You no longer have to go to the printer or print server to determine status or to isolate problems. You increase your productivity by receiving printer and job status on your OS/2 Warp desktop.

For more information on HP JetAdmin, read README.1ST located in directory /BPIU/HP JET on OS/2 Warp Server CD 2.

- MarkVision for OS/2 by Lexmark International, Inc.

MarkVision enables you to easily install, configure, query, and troubleshoot network-attached Lexmark printers from your OS/2 Warp desktop. MarkVision is fully integrated with OS/2 Warp, the Enhanced OS/2 Warp Spooler, and the OS/2 File and Print Sharing Services. This integration provides a standard view of printer and job status through the OS/2 printer object in the OS/2 Workplace Shell. Furthermore, MarkVision is a Workplace Shell application that is launched from the OS/2 printer object. This provides a consistent "look and feel" that significantly enhances the usability of the solution.

This solution allows you to:

- Support Lexmark network-attached printers that are connected using token-ring or Ethernet.
- See the actual status of your print jobs throughout the printing process.
- All users receive true end-of-job notification. No more wasted trips to the printer!
- See the actual status of the printer. You can view this status using your OS/2 printer objects or through the MarkVision GUI.
- Remotely monitor, configure, and manage your network-attached printer through the MarkVision GUI.
- Reduce network traffic by centralizing control and setup of your network-attached printers on an OS/2 Warp Server print server. You can also control access to your network-attached printers by using OS/2 Warp Server's security services.
- View the capabilities of your network-attached printers using the MarkVision GUI.
- Assign more than the previous limit of 24 printers to an OS/2 Warp Server print server. MarkVision has no pre-determined limit for the

number of network-attached printers per server. However, for performance reasons, it is recommended that customers distribute their printers evenly among the available servers in the network.

- Manage your network-attached printers using IBM's NetView.
- Collect, store, and view a summary of job statistics information for any job printed on your Lexmark Optra LaserPrinter.
- View printer statistics.
- Conveniently access and set up network printer ports for Lexmark network-attached printers from the OS/2 printer object.

MarkVision provides all of its status monitoring capabilities without polling the printer. Since the printer initiates the alert message to the host where MarkVision is running, network traffic is kept to an absolute minimum. This is done by using protocol standard IEEE P1284.1, sometimes referred to as the Network Printing Alliance Protocol (NPAP). Lexmark is one of the founding members of this alliance.

MarkVision supports the Lexmark Optra Family and 4039 plus family of printers attached to MarkNet XL or XLe network adapter.

This solution makes you more productive by giving you the tools to remotely manage network-attached printers from your OS/2 Warp desktop. You no longer have to go to the printer or print server to determine status or to isolate problems. You increase your productivity by receiving printer and job status on your OS/2 Warp desktop.

For more information on Lexmark's MarkVision, read README.1ST located in directory /BPIU/MARKVISN on OS/2 Warp Server CD 2.

#### AskPSP

OS/2 Warp Server comes with its own built-in Help Desk. AskPSP is an expert system that can answer many of the more frequently encountered questions and problems that you may run into when using your workstation in the OS/2 Warp Server environment for the first time. This will aid learning and save you much time. You pose the question; may come back for additional information to narrow the possibilities; and it provides you with possible solutions. Support is provided for:

- OS/2 Warp 3.0
- File and Print Sharing Services
- Remote Access Services
- Advanced Print Services
- TCP/IP Services
- Adapters and Protocols Services
- Backup and Recovery Services

#### SNMP/DMI Agent

OS/2 Warp Server provides a SystemView Agent that conforms to the Desktop Management Interface (DMI) to allow SNMP management of DMI-compliant hardware and software components. Specific subagents are included to allow the management of IBM OS/2 (including OS/2 Warp); IBM Communications Manager/2; IBM OS/2 LAN Server (Versions 3.0 and 4.0) and LAN Requester; and DB2/2™. Components can be managed by any SNMP management platform, such as IBM's SystemView for AIX and NetView for OS/2.



## Mobile File Sync (MFS)

MFS is a client-mode utility that was first distributed with the AttachPak for OS/2 Warp Connect and has now been updated to improve its performance. It enables client users to physically disconnect from the server and still have access to their (stored) Server files. Users can read or modify existing files, create new files or directories, or delete existing ones. Reconnection to the server automatically updates the server. MFS provides extensive conflict detection and resolution of any files changed on the server or the client.

## Software Registration (Active)

IBM encourages you to register as an OS/2 Warp Server user so we may better serve you as developments occur. Accordingly, we have included a registration tool to facilitate this action. At initial install or at your convenience later, if desired, you are encouraged to send us appropriate details of yourself and your organization. You are given the options of registering directly using a modem or by responding by telephone, fax, or mail.

## Client Support

The following table details the OS/2 Warp Server function that the supported clients are capable of utilizing:

| OS/2 Warp Server Services                                                                                                                                                                             | Client Platform                                                |                                                               |                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
|                                                                                                                                                                                                       | OS/2 Warp                                                      | Windows                                                       | DOS                                                           |
| File and Print (F/P)                                                                                                                                                                                  | OS/2 F/P Client (1)                                            | DOS F/P Client (2, 4)                                         | DOS F/P Client (3)                                            |
| Systems Management (SM)                                                                                                                                                                               | OS/2 SM Client (1)                                             | Windows SM Client (2)                                         | None                                                          |
| Advanced Print                                                                                                                                                                                        | Prereq: OS/2 F/P Client<br>Optional: Advanced Print Client (1) | Prereq: DOS F/P Client<br>Optional: Advanced Print Client (2) | Prereq: DOS F/P Client<br>Optional: Advanced Print Client (3) |
| Backup and Recovery                                                                                                                                                                                   | None                                                           | None                                                          | None                                                          |
| Remote LAN Access (RLA)                                                                                                                                                                               | RLA OS/2 Client (1)                                            | RLA Windows Client (2)                                        | None                                                          |
| Transports                                                                                                                                                                                            | MPTS (NB, 802.2, IPX, TCP/IP), TCP/IP apps and IAK, IPX (1)    | LSP 1.38, DOS TCP/IP (2)                                      | LSP 1.38, DOS TCP/IP (3)                                      |
| <b>Note.</b><br>(1) OS/2 2.11, OS/2 Warp V3, OS/2 Warp Connect<br>(2) Windows 3.1, Windows 3.11, Windows-for-Workgroups<br>(3) IBM DOS V6.3, or later, Microsoft DOS V6.0, or later<br>(4) Windows 95 |                                                                |                                                               |                                                               |

## FirstStep Package

The OS/2 Warp Server FirstStep package is offered as a convenient starter package for the new LAN server customer and contains all the software needed to set up a 10-user network. FirstStep includes OS/2 Warp Server, Version 4 along with 10 use-based features (UBFs).

## LAN Server for Macintosh, Version 1.01

LAN Server for Macintosh, a complimentary product of OS/2 Warp Server, was previously announced with OS/2 LAN Server, Version 3.0 (refer to Software

Announcement 292-600, dated October 13, 1992). In addition to the functionality contained in Version 1.0, enhancements have been made to installation, configuration, and reliability. The LAN Server for Macintosh continues to support all Macintosh clients Version 6.0.5, or later, including PowerMac clients.

**Note:** Customers who have purchased LAN Server for Macintosh Version 1.0 need not purchase Version 1.01. A Service Pak (IP06200) is available to add the enhancements offered by Version 1.01. Service Paks are available through IBM Software Solution Services at 800-992-4777. They are also available electronically from the following sources:

- OS/2 Bulletin Board Service (BBS): In Software Library, select Option 2. (Corrective services are also listed under the General category on the IBMLink™ BBS.) To subscribe to the OS/2 BBS, call 800-547-1283.
- IBM Personal Computer Company (PCC) BBS: Call 919-517-0001. Service packages are located in Directory 4.
- CompuServe: Download service package from the IBM OS/2 FORUM library (GO IBMOS2 IBM DF2).
- Internet: Do an anonymous FTP from ps.boulder.ibm.com at /ps/products/. TCP/IP packages are located at software.raleigh.ibm.com at OS2V20.

## Complimentary Products

In addition to the LAN Server for Macintosh product, there are other IBM products that can be used with OS/2 Warp Server to extend the capabilities provided in terms of system management, backup and restore, printing, and platform support. These products are:

- SystemView family of products
- ADSTAR® Distributed Storage Manager (ADSM/2) family of products
- PSF for OS/2 Version 2 (5622-551) to provide:
  - Print distribution from a host (PSF Direct, Distributed Print Facility)
  - Direct 370 Channel printer, coax, and SDLC attachment capability
- LAN Server for AIX
- LAN Server for AS/400®
- S/390® IBM LAN File Services/ESA — LAN Server product for MVS and VM

## Use-Based Charging Structure

OS/2 Warp Server and OS/2 Warp Server Advanced contain features that are subject to separate use-based charges. You must acquire one UBF for each user (UserID) registered to use or access Chargeable Services (defined below). This access may be to one or more OS/2 Warp Servers within your enterprise and to OS/2 LAN Servers or OS/2 LAN Distance Connection Servers within your enterprise.

The total number of users accessing Chargeable Services cannot exceed the number authorized by the applicable Proof of Entitlement. If the total number exceeds the number in the Proof of Entitlement, you must notify IBM or its reseller to purchase more UBFs as stated in the IPLA.

## Notes:

- OS/2 Warp Server and OS/2 Warp Server Advanced each contain one UBF Proof of Entitlement as part of the product package.



- OS/2 Warp Server and OS/2 Warp Server Advanced additional licenses also contain a UBF Proof of Entitlement.
- A customer is entitled to one OS/2 Warp Server, Version 4 UBF for each OS/2 Warp Connect Version 3 Proof of Entitlement. No further customer action is required.
- The total number of users accessing the OS/2 Warp Servers in an enterprise is equal to the number of UBFs plus the number of OS/2 Warp Connect Proofs of Entitlement.

The use of pooling or multiplexing hardware (or software) that reduces the number of users directly accessing or utilizing Chargeable Services does not reduce the number of UBFs required. The number of UBFs required equals the number of distinct users accessing or utilizing the pooling or multiplexing software or hardware "front end."

The following are defined as Chargeable Services:

- File and Print Sharing Services (the sharing/managing of files and/or disk storage and/or printers)
- Systems Management Services (the gathering and distributing of system and network information)
- Remote Access Services (server access via a communications link)

The following are Non-Chargeable Services:

- Using services on OS/2 Warp Server other than the Chargeable Services
- Accessing Chargeable Services solely to configure or administer OS/2 Warp Server
- Using OS/2 Warp Server (exclusive of Chargeable Services) to access or run IBM or third-party applications

OS/2 Warp Server also has Requester Components and End-User Components (defined below) that are designed for use on other than the machine on which the Server Components are used. You may make copies of these components and their documentation at no additional charge. Copies of these components and/or documentation may be used only in support of your authorized use of the Server Components.

The following are defined as Requester Components:

- OS/2 File and Print Client
- DOS LAN Services
- Remote Access Client
- System Management Client
- TCP/IP Services (may not be configured for DHCP or DDNS)
- Windows 95 Client

The following are defined as End-User Components:

- Mobile File Sync
- AskPSP
- SNMP/DMI agent
- NetWare/LAN Server Migration Utility
- HP Print Utilities
- Lexmark Print Utilities
- PSF/2 client (APRINT for OS/2 and DOS; and AFP data stream generators for Windows and OS/2)
- Enhanced OS/2 Spooler upgrade pack

## Publications

The following publications are available. To order, contact your IBM representative or call 800-426-7282.

### OS/2 Warp Server, Version 4 — General Services

| Title                                            | Order Number |
|--------------------------------------------------|--------------|
| OS/2 Warp Server Version 4<br>Easy Start booklet | S25H-8003    |
| OS/2 Warp Server Version 4<br>Up and Running!    | S25H-8004    |

**ITSO Technical Bulletins (Redbooks):** Customers can order ITSO books by calling 800-879-2755 or by faxing requests to 800-284-4721. Visa and MasterCard are accepted.

Customers can order hardcopy Redbooks individually or in customized sets, called GBOFs, which relate to specific functions of interest. Customers can also order Redbooks in online format on CD-ROM collections, which contain the Redbooks for multiple products.

Following is a list of available Redbooks:

| Title                                                                                | Order Number |
|--------------------------------------------------------------------------------------|--------------|
| Inside OS/2 Warp Server, Version 4,<br>Volume 1                                      | SG24-4602    |
| Inside OS/2 Warp Server, Version 4,<br>Volume 2 (Planned availability<br>March 1996) | SG24-4702    |
| Understanding IBM OS/2 LAN Server<br>Performance Tuning                              | GG24-4430    |
| Migration to OS/2 LAN Server<br>from NetWare                                         | GG24-4388    |
| Migration to OS/2 LAN Server<br>from LAN Manager                                     | GG24-4387    |
| Automating OS/2 LAN Server<br>Administration                                         | GG24-4442    |
| Experiences with OS/2 LAN Server 4.0                                                 | GG24-4428    |
| LAN Server 4.0 Interoperability                                                      | GG24-4447    |

**Displayable Softcopy Publications:** IBM OS/2 Warp Server, Version 4 includes displayable manuals online as .INF files. The softcopy publication files are shipped on the same media as the basic machine-readable material and can be viewed by simply clicking on the appropriate book icon.

The *Easy Start* and *Up and Running* manuals are available both online and printed. Terms and conditions for use of the machine-readable files are shipped with the files.

Additionally, the following books are available in displayable BookManager® form:

- License Use Runtime Administrator's and User's Guide
- SystemView Up and Running!



## Education Support

The appropriate curriculum will be updated, as necessary, to include the product enhancements in this announcement.

Details of the education support will be provided by planned availability through a separate education announcement.

The following education is planned for OS/2 Warp Server:

- Self-study technical, installation training is available via a self-study guide and CD-ROM.
- Classroom training is available in IBM Authorized Education Centers.

Additional information on education is provided on the Internet via the World Wide Web (WWW) home page at URL:

<http://www.austin.ibm.com/pspinfo/>

Refer to the EDUCATION application on HONE for available courses and schedules.

Call IBM Education and Training at 800-IBM-TEACH (426-8322) for education catalogs, schedules, and enrollment.

## Technical Information

### Specified Operating Environment

#### Hardware Requirements

#### OS/2 Warp Server, Version 4 and OS/2 Warp Server Advanced, Version 4

- OS/2 Server Components and Clients:

Require the appropriately configured hardware platforms supported by OS/2 Warp, Version 3.0, or later, operating system. In addition to supporting appropriately configured IBM hardware and IBM operating system platforms, this product also supports selected OEM-equivalent hardware that has passed OS/2 Warp, Version 3.0, or later, compatibility tests. Refer to **OS/2 Compatible Systems** below.

- Windows Clients:

Support the appropriately configured hardware required to support Windows 3.1, Windows 3.11, Windows-for-Workgroups, and Windows 95.

- DOS File and Print Client:

Supports the appropriately configured hardware required to support the IBM DOS 6.1, 6.3, and 7.0, or later, operating systems, or IBM-approved OEM-equivalent. If desired, Windows 3.1 may be installed.

#### LAN Server for Macintosh (LSM)

LSM requires the appropriately configured hardware platforms supported by OS/2 Warp, Version 3.0, or later, operating system. In addition to supporting appropriately configured IBM hardware and IBM operating system platforms, this product also supports selected OEM-equivalent hardware that has passed OS/2 Warp, Version 3.0, or later, compatibility tests.

## OS/2 Compatible Systems

The IBM OS/2 operating system supports all Intel 386SX-based, and higher, (or compatible) PC manufacturer (PCM) systems in the marketplace. The list includes those systems that have passed OS/2 compatibility testing. OS/2 compatibility testing verifies 30 key functions of the OS/2 operating system on selected PCM model configurations.

The list of compatible systems is available electronically on these Bulletin Board Systems:

- IBM National Support Center BBS (data connection: 919-517-0001)
- CompuServe (IBM OS/2 Support Forum \ Library \ IBMFiles \ PCMTABLE.ZIP)
- Prodigy

**Note:** Compatibility test information is provided for information purposes only. IBM makes no warranty, express or implied, with respect to the operation of OS/2 on the PCs listed.

#### Hardware Adapters

A list of currently supported adapters may be found on CompuServe or can be provided by contacting your IBM representative. CompuServe access to the list is found by selecting the following:

- IBM
- Technical Service and Support
- IBM OS/2 Forums
- OS/2 Developers 2 Forum
- OS/2 Warp Server Network Interface Card (Filename = NICWS40.TXT)

#### Hardware Estimating Worksheet

To calculate the amount of memory required to run the components of OS/2 Warp Server, refer to the information found in **Planning Information** and **Customer Responsibilities**.

#### Hardware Estimating Worksheet

| OS/2 Warp Server Hard Disk Space Requirements |                                          |
|-----------------------------------------------|------------------------------------------|
| Service                                       | Server Hard Disk Space Requirements (MB) |
| OS/2 Warp Base Operating System               | 71.5                                     |
| Adapters and Protocol Services                | 9.5                                      |
| OS/2 Warp Server Files                        | 13.0                                     |
| SWAPPER.DAT (recommended)                     | 40.0                                     |
| File and Print Sharing Services               | 20.0                                     |
| Remote Access Services                        | 5.5                                      |
| Systems Management Services                   | 45.5                                     |
| Backup and Recovery Services                  | 3.5                                      |
| Advanced Print Services                       | 54.0                                     |
| TCP/IP Services                               | 22.5                                     |
| Online References                             | 10.0                                     |



| OS/2 Warp Server Hard Disk Space Requirements for Clients                                                                                                                                                                                                        |             |          |              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------|--------------|
| Service                                                                                                                                                                                                                                                          | OS/2 (MB)   | DOS (MB) | Windows (MB) |
| OS/2 Warp Base Operating System                                                                                                                                                                                                                                  | 64.0        | 4.0      | 8.5          |
| Adapters and Protocols Services                                                                                                                                                                                                                                  | 9.0         | (2)      | (2)          |
| SWAPPER.DAT                                                                                                                                                                                                                                                      | 20.0 (1)    | (2)      | (2)          |
| File and Print Client                                                                                                                                                                                                                                            | 12.0        | 2.5      | 2.5          |
| Remote Access Client                                                                                                                                                                                                                                             | 5.0         | 2.6      | 2.6          |
| Systems Management Client<br>Temporary Installation Space                                                                                                                                                                                                        | 24.0<br>8.0 | 17.0     | 17.0         |
| TCP/IP Client                                                                                                                                                                                                                                                    | 23.0        | (2)      | (2)          |
| Online References                                                                                                                                                                                                                                                | 9.0         | 2.2      | 2.2          |
| OS/2 Client Files                                                                                                                                                                                                                                                | 5.5         | (2)      | (2)          |
| <b>Note:</b><br>(1) Depending on the amount of memory in the system and the applications running concurrently, the SWAPPER.DAT file might become quite large. Reserved SWAPPER.DAT DASD space of at least 20MB is recommended.<br>(2) Information not available. |             |          |              |

### Backup and Recovery-Supported Media

- 8-mm Tape Drives:
  - IBM 3532 Model 23
  - IBM 3445 Model 001
  - Andataco Encore 8205
  - Andataco Encore 8505
  - Cybernetics CY8205
  - Cybernetics CY8500
  - Cybernetics CY8505
  - Dynatek HSB 2300
  - Dynatek HSB 10.0
  - Dynatek HSB 5000
  - Exabyte EXB-8200
  - Exabyte EXB-8205
  - Exabyte EXB-8205XL
  - Exabyte EXB-8500
  - Exabyte EXB-8500C
  - Exabyte EXB-8505
  - Exabyte EXB-8505XL
  - Sun 8505XL
  - Transitional Technologies, Inc. CTS 8000H
  - Transitional Technologies, Inc. CTS 8519H
- 4-mm Tape Drives:
  - IBM 3440 Model 001
  - IBM (74G8632/8191339)
  - IBM (74G8631/8191359)
  - IBM 4326NP/RP
  - HP 3570A
  - HP 35480A
  - HP C1553A
  - HP JetStore 2000e
  - HP JetStore 5000e
  - Wangdat 3300DX
  - Wangdat 3400DX
  - Sony SDT5000
- QIC:
  - IBM 3450 Model 001
  - Tecmar QT525ES
  - Wangtek 5525ES
- DLT:
  - Quantum DLT 2000
  - Quantum DLT 4000

**Note:** QIC drive support requires pre-formatted tapes.

**Lexmark MarkVision Supported Printers:** MarkVision supports the Lexmark Optra family and 4039 plus family of printers attached to MarkNet XL or XLe network adapters.

HP JetAdmin supports these HP printers and plotters with HP JetDirect print servers:

### MIO Devices

- **HP LaserJet 4, 4M, 4 Plus, 4M Plus, 4V, 4MV, 4Si, and 4Si MX printers**
- HP LaserJet IIISi printer
- HP Color LaserJet printer
- HP DeskJet 1200C and 1200C/PS printers
- HP PaintJet XL300 and XL300 PostScript color printers
- HP DesignJet 650C and 600 plotters

### XIO Devices

- HP LaserJet IIID, III, IID, and II printers
- HP JetDirect EX and JetDirect EX Plus3 Connected
- **HP LaserJet 5P, 5MP, 4P, 4MP, 4L, and 4ML printers**
- HP LaserJet IIIP, IIP plus, and IIP printers
- HP DeskJet 510, 520, 55C, and 560C printers
- HP DesignJet 200/220 plotter
- HP DraftPro Plus plotter

HP JetAdmin features vary depending on the level of functionality of the HP JetDirect print server or the peripheral devices. HP JetAdmin fully supports the functions of the advanced network printing solutions in OS/2 Warp Server for all printers that are highlighted.

**Software Requirements:** The operating system requirements for OS/2 Warp Server, Version 4 and OS/2 Warp Server Advanced, Version 4 and the clients that are included with the products are as follows:

**Note:** Refer to the charts on Client Capabilities under Client Support in the **Description** for a table of the supported client function for both included, as well as pre-existing clients.

### Server Requirements:

IBM OS/2 Warp 3.0 base operating system has been integrated with IBM OS/2 Warp Server, Version 4 and IBM OS/2 Warp Server Advanced, Version 4. Therefore, OS/2 Warp Server and OS/2 Warp Server Advanced have no prerequisite software requirements.

### Client Requirements:

- The OS/2 Warp Server clients (OS/2 File and Print Client, Remote Access Client, System Management Client) run on OS/2 Warp 3.0, OS/2 Warp Connect, or IBM-approved OEM-equivalent.
- Remote Access Client, System Management Client, and DOS File and Print Client clients also run on Windows 3.1, and later.
- The Windows 95 Client provided with IBM OS/2 Warp Server, Version 4 and IBM OS/2 Warp Server Advanced, Version 4 runs on Windows 95.
- The DOS File and Print Client runs on any IBM DOS Version 6.3, or later, Microsoft DOS 6.0, or later, or IBM-approved equivalent.

LAN Server for Macintosh Version 1.01 requires OS/2 LAN Server 3.0, or later.

**OEM Operating Systems:** IBM certification testing has been completed on various OEM hardware and operating systems. OS/2 Warp Server, Version 4 and OS/2 Warp Server Advanced, Version 4, including requesters, are



supported on those OEM platforms that are listed in Prodigy and CompuServe, under OS/2 Forums. Use search word OS/2 to find various forums related to OS/2 products, including OS/2 Warp Server.

**Compatibility:** OS/2 Warp Server, Version 4 and OS/2 Warp Server Advanced, Version 4 support 32-bit applications created with the IBM C SET/2 Version 1.0 compiler. The support allows 32-bit applications to call the 16-bit APIs. Microsoft C Version 6.0 is also supported.

Problems resulting from compiler errors must be reported to the appropriate vendor.

**Hardware Adapter Support:** Multiple adapter support consists of the ability to manage up to four logical networks concurrently. Token-ring and Ethernet adapters are supported. The multiple adapter support is expected to be used primarily on servers; however, this support is available on OS/2 requesters as well. A maximum of 254 NetBIOS sessions are supported per adapter card. With four adapters, up to 1,000 NetBIOS sessions are supported. Using a single adapter, TCPBEUI can support up to 1,000 sessions. In either case, the maximum number of sessions supported is 1,000.

The OS/2 Warp Server's support of the Network Device Interface Specification (NDIS) makes it possible to support many LAN adapter cards with NDIS-compliant device drivers. Some drivers for the OS/2 environment are shipped with OS/2 Warp Server, Version 4 and OS/2 Warp Server Advanced, Version 4 for the supported LAN adapters. The NDIS interface is publicly documented and supported. In addition to support of the documented NDIS-compliant adapters, a Loop Back driver is included for communication back to the same system. These NDIS-compliant adapters are documented on CompuServe. Refer to **Hardware Requirements** for details on how to retrieve the list of currently supported adapters.

**Remote IPL Support:** Servers providing the Remote IPL service can be equipped with any adapter supported by OS/2 Warp Server, Version 4 or OS/2 Warp Server Advanced, Version 4.

Remote IPL requesters must be equipped with at least one of the network adapter types that supports RIPL.

In addition to the OS/2 Versions that were previously supported by Remote IPL, the following OS/2 versions are also supported.

- OS/2 Warp 3.0 with WIN-OS/2
- OS/2 Warp Connect for Windows (base operating system only)
- OS/2 Warp Connect with WIN-OS/2 (base operating system only)
- OS/2 Warp Server (base operating system only)

IBM DOS 7.0 has been added to the list of DOS versions supported.

**LAN Adapter Support:** A list of supported adapters are available on several online forums such as CompuServe. Refer to this list for adapter support that best suits your needs. Refer to **Hardware Requirements** for CompuServe access information.

**File and Print Services Capability:** The following four tables detail the interoperability of previously available clients, including the OS/2 Warp Server Version 4 and OS/2 Warp Server Advanced, Version 4 clients with previously available servers and the OS/2 File and Print Sharing Services. Limitations to their interoperability are contained in the following set of notes.

| OS/2 Warp Server — File/Print Services<br>Client Interoperability<br>Table (1 of 4)                                 |                                                       |                                           |                                              |                                                                 |
|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------|----------------------------------------------|-----------------------------------------------------------------|
| Clients:                                                                                                            | Servers:                                              |                                           |                                              |                                                                 |
|                                                                                                                     | PCLP<br>1.31 (or<br>later)<br>Base<br>Services<br>(7) | PCLP<br>1.31 (or<br>later)<br>(ES)<br>(7) | OS/2 LAN<br>Server<br>2.0,<br>3.0, or<br>4.0 | OS/2 Warp<br>Server<br>File and<br>Print<br>Sharing<br>Services |
| PCLP 1.31<br>(or later) (BS)(7)                                                                                     | R                                                     | R (1)<br>L (2)                            | R (1)<br>L (2)                               | R (1)<br>L (2)                                                  |
| PCLP 1.31<br>(or later) (ES)(7)                                                                                     | R                                                     | L<br>A                                    |                                              |                                                                 |
| OS/2 LAN Requester<br>(shipped with LAN<br>Server 2.0, 3.0,<br>or 4.0, LAN<br>Enabler 2.0, or<br>OS/2 Warp Connect) | R                                                     | R                                         | R<br>L<br>D<br>A                             | R<br>L<br>D<br>A                                                |
| OS/2 File and Print<br>Client (shipped<br>with OS/2 Warp<br>Server)                                                 | R                                                     | R                                         | R<br>L<br>D<br>A                             | R<br>L<br>D<br>A                                                |
| DOS LAN Requester<br>(shipped with OS/2<br>LAN Server 2.0,<br>3.0, or 4.0)                                          | R                                                     | R                                         | R<br>L<br>D<br>A (4)                         | R<br>L<br>D<br>A (4)                                            |
| DOS File and Print<br>Client (shipped<br>with OS/2 Warp<br>Server)                                                  | R                                                     | R                                         | R<br>L<br>D<br>A (5)                         | R<br>L<br>D<br>A (5)                                            |
| Abbreviations:                                                                                                      |                                                       |                                           |                                              |                                                                 |
| A = Administrative capabilities                                                                                     |                                                       |                                           |                                              |                                                                 |
| R = Access to shared resources (file, print, serial)                                                                |                                                       |                                           |                                              |                                                                 |
| L = Domain logon capability                                                                                         |                                                       |                                           |                                              |                                                                 |
| D = Domain services (aliases, application definitions)                                                              |                                                       |                                           |                                              |                                                                 |
| BS = Base Services                                                                                                  |                                                       |                                           |                                              |                                                                 |
| ES = Extended Services for OS/2                                                                                     |                                                       |                                           |                                              |                                                                 |
| L = Logon capability                                                                                                |                                                       |                                           |                                              |                                                                 |
| PCLP = PC LAN Program                                                                                               |                                                       |                                           |                                              |                                                                 |



| OS/2 Warp Server — File/Print Services<br>Client Interoperability<br>Table (2 of 4)                 |                                                            |                                                                                         |                                                                                   |                                 |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------|
| Clients:                                                                                            | Servers:                                                   |                                                                                         |                                                                                   |                                 |
|                                                                                                     | MS LAN Manager; Windows NT or NTAS: Windows for Workgroups | OS/2 LAN Server 3.0, 4.0; OS/2 File and Print Sharing Services (Peer Services for OS/2) | OS/2 LAN Server 4.0; OS/2 File and Print Sharing Services (Peer Services for DOS) | Peer for OS/2 from Warp Connect |
| PCLP 1.31 (or later) (BS)(7)                                                                        | R (1)                                                      | R (1,3)                                                                                 | R (1,3)                                                                           | R                               |
| PCLP 1.31 (or later) (ES)(7)                                                                        |                                                            |                                                                                         |                                                                                   |                                 |
| OS/2 LAN Requester (shipped with LAN Server 2.0, 3.0, or 4.0, LAN Enabler 2.0 or OS/2 Warp Connect) | R                                                          | R (3)<br>A (10)                                                                         | R (1,3)                                                                           | R<br>A (10)                     |
| OS/2 File and Print Client (shipped with OS/2 Warp Server)                                          | R                                                          | R (3)<br>A (10)                                                                         | R (1,3)                                                                           | R<br>A (10)                     |
| DOS LAN Requester (shipped with OS/2 LAN Server 2.0, 3.0, or 4.0)                                   | R                                                          | R (3)<br>A (10)                                                                         | R (1,3)                                                                           | R<br>A (10)                     |
| DOS File and Print Client (shipped with OS/2 Warp Server)                                           | R                                                          | R (3)<br>A (10)                                                                         | R (1,3)                                                                           | R<br>A (10)                     |

| OS/2 Warp Server — File/Print Services<br>Client Interoperability<br>Table (3 of 4) |                                        |                               |                                  |                                                  |
|-------------------------------------------------------------------------------------|----------------------------------------|-------------------------------|----------------------------------|--------------------------------------------------|
| Clients:                                                                            | Servers:                               |                               |                                  |                                                  |
|                                                                                     | PCLP 1.31 (or later) Base Services (7) | PCLP 1.31 (or later) (ES) (7) | OS/2 LAN Server 2.0, 3.0, or 4.0 | OS/2 Warp Server File and Print Sharing Services |
| Windows 95 Client (shipped with OS/2 Warp Server)                                   | R                                      | R                             | R (11)<br>L<br>D<br>A (5)        | R (11)<br>L<br>D<br>A (5)                        |
| Windows 3.X Client (shipped with OS/2 Warp Server)                                  | R                                      | R                             | R (11)<br>L<br>D                 | R (11)<br>L<br>D                                 |
| MS LAN Manager (9)                                                                  | R                                      | R                             | R<br>L<br>A (8)                  | R<br>L<br>A (8)                                  |
| MS NT or NTAS (9)                                                                   | R                                      | R                             | R (11)<br>A (8)                  | R (11)<br>A (8)                                  |
| MS Windows for Workgroups (9)                                                       | R                                      | R                             | R (11)<br>L                      | R (11)<br>L                                      |
| Workgroup (9) Connection for DOS                                                    | R                                      | R                             | R (11)<br>L                      | R (11)<br>L                                      |
| Windows 95 (9)                                                                      | R                                      | R                             | R (11)                           | R (11)                                           |

| OS/2 Warp Server — File/Print Services<br>Client Interoperability<br>Table (4 of 4) |                                                            |                                                                                        |                                                                                   |                                      |
|-------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------|
| Clients:                                                                            | Servers:                                                   |                                                                                        |                                                                                   |                                      |
|                                                                                     | MS LAN Manager; Windows NT or NTAS: Windows for Workgroups | Peer Services for DOS (OS/2 LAN Server 3.0, 4.0; OS/2 File and Print Sharing Services) | Peer Services for DOS (OS/2 LAN Server 4.0; OS/2 File and Print Sharing Services) | Peer for OS/2 from OS/2 Warp Connect |
| Windows 95 Client (shipped with OS/2 Warp Server)                                   | R                                                          | R (3)<br>A (10)                                                                        | R (1,3)                                                                           | R<br>A (10)                          |
| MS LAN Manager                                                                      |                                                            | R<br>A (8)                                                                             | R                                                                                 | R                                    |
| MS NT or NTAS                                                                       |                                                            | R<br>A (8)                                                                             | R                                                                                 | R                                    |
| MS Windows for Workgroups (9)                                                       |                                                            | R                                                                                      | R                                                                                 | R                                    |
| Workgroup Connection for DOS                                                        |                                                            | R                                                                                      | R                                                                                 | R<br>L                               |

#### Notes:

1. Remote access to serial devices is not supported.
2. The network administrator defines a user ID that matches the machine name of the PCLP Base Services workstation. When the workstation issues a NET USE command, the machine name is validated against the defined user IDs.
3. Peer Services for DOS and OS/2 are limited to sharing with one client at a time (single session). The Peer module of OS/2 Warp Connect may share services with multiple clients.
4. Administrative capability from the DOS File and Print Client is available only from the File and Print Sharing Services API. A large number of categories that support remote network administration are supported.
5. In addition to the API support described above, File and Print Services for OS/2 Warp Server includes the NET ADMIN command, which allows full command line administration of File and Print Sharing Services.
6. PCLP and Microsoft servers cannot be defined with a File and Print Sharing Services domain; access to those resources are cross-domain.
7. PCLP is available on single-byte character set (SBCS) systems only.
8. Partial administration function only.
9. Function available in base product.
10. Command line administration via NET ADMIN only.
11. No serial device support.

**Restrictions:** Mixing and matching network componentry from different levels of products is not supported. For example, OS/2 LAN Requester 4.0 is not supported by OS/2 Warp Server MPTS.

If any network component is upgraded with a like network component from OS/2 Warp Server, all network components must be upgraded to OS/2 Warp Server. For example, if MPTS is upgraded on an OS/2 LAN Requester 4.0, then the requester must be upgraded to OS/2 Warp Server File and Print Client at the same time. Related OS/2 Warp Server client components include:



- MPTS
- File and Print
- Systems Management
- Remote LAN Access

For DOS and Windows, related client components are:

- DOS File and Print
- Systems Management
- Remote LAN Access
- LSP
- TCP/IP

#### Limitations:

- **Password Coordination support on TCP/IP**

Password Coordination does not support TCP/IP directly. The TCPBEUI supported by OS/2 Warp Server can be utilized by Password Coordination indirectly via UPM. Any logon/logoff supported by UPM can be performed by or through the UPM APIs.

- **RIPL over TCP/IP**

RIPL support is not available for OS/2 File and Print Client when used over TCP/IP.

- **Backup and Recovery Services**

For Backup and Recovery some application files may require special treatment. If, for example, the application has constant write access to files or has other complex processes, backup/recovery may best be accomplished within the application using APIs provided by the ADSM product for this purpose. Also note that for disaster recovery, LAN, remote, or ADSM drives are not supported.

- **Systems Management Services**

- Windows 95, DOS, and Macintosh are not supported.
- License management is not supported on clients with IPX Protocol.
- License management is not supported on Windows clients.
- Software Distribution function does not work on serial connection.
- Cross-platform/cross domain management is not supported. For example, Systems Management Services cannot manage other Enterprise agents such as NV/6000 agents on AIX or NVDM agents on OS/2 or MVS.

**Performance Considerations:** The File and Print Services runs as much as 14% faster than OS/2 LAN Server 4.0, thanks to improvements in OS/2 Warp, Version 3 over OS/2, Version 2.11.

A new TCP/IP protocol stack that includes TCPBEUI functionality for DOS File and Print and Windows clients has significantly improved performance over OS/2 LAN Server 4.0. It is now close enough to NetBEUI performance for file and print functions that most users will not observe a difference between them.

Also, included is a new Protect Mode TCPBEUI protocol stack for the DOS and Windows clients that provides good performance and uses no conventional memory.

## Planning Information

The following information is provided as a guideline for determining the number of OS/2 Warp Server services and number of users that can be supported given the processor/MHz, amount of memory, and size of the hard disk:

| Configuration                                                                                                  | Services Supported                                                                                                             | Number of Users                                                                     |
|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Entry:<br>- Intel-compatible 386/33<br>- 16MB RAM<br>- 160MB Hard Disk (plus user disk space)                  | - File and Print Sharing (not OS/2 Warp Server Advanced)<br>- Backup and Recovery services                                     | Small to Medium LAN:<br>- 20-80 users running File and Print or Backup and Recovery |
| Typical:<br>- Intel-compatible 486/66, or better<br>- 24-32MB RAM<br>- 212MB Hard Disk (plus user disk space)  | - File and Print Sharing<br>- Advanced<br>- Backup and Recovery<br>- Either:<br>- Remote Access or<br>- Advanced Print         | Medium to Large LAN:<br>- 40-100 users running 2-3 services                         |
| Full:<br>- Intel-compatible Pentium/90, or better<br>- 48-64MB RAM<br>- 264MB Hard Disk (plus user disk space) | - File and Print Sharing<br>- Advanced<br>- Backup and Recovery<br>- Remote Access<br>- Advanced Print<br>- Systems Management | Medium to Large LAN:<br>- 100-300 users running multiple services                   |

## Customer Responsibilities

### Memory Estimating Worksheet

| OS/2 Warp Server Memory Requirements                                                                                                                                                                                   |                            |                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------|
| Service                                                                                                                                                                                                                | Minimum Configuration (MB) | Multi-Client Configuration (MB) |
| OS/2 Warp Base Operating System                                                                                                                                                                                        | 4.0                        |                                 |
| Remote Access Services                                                                                                                                                                                                 | 3.3                        |                                 |
| Systems Management Services                                                                                                                                                                                            | 6.7                        | Up to 44.0 (2)                  |
| Backup and Recovery Services                                                                                                                                                                                           | 1.9                        |                                 |
| Advanced Print Services                                                                                                                                                                                                | 1.8                        |                                 |
| File and Print Sharing Services                                                                                                                                                                                        | 6.1                        |                                 |
| Diskcache                                                                                                                                                                                                              | 1.0 (1)                    | Up to 14.0 (1)                  |
| HPFS Cache                                                                                                                                                                                                             | 1.0 (1)                    | Up to 2.0 (1)                   |
| File and Print Sharing Services - Advanced                                                                                                                                                                             | 7.1                        | 12.0                            |
| 386 HPFS Cache                                                                                                                                                                                                         | 3.0 (1)                    | All Available Memory (1)        |
| Notes:<br>(1) These parameters impact the performance of File and Print Sharing Services: File system cache size.<br>(2) For more detailed information about this requirement, refer to Using IBM SystemView for OS/2. |                            |                                 |



| OS/2 Warp Server Memory Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                            |                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------|
| Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Minimum Configuration (MB) | Multi-Client Configuration (MB) |
| Performance Reserve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 6.0                        | 12.0                            |
| <b>Note:</b><br>When estimating memory requirements, it is essential to make a provision for all services that might reside in OS/2 Warp Server at any one time in order to obtain optimal performance. However, most programs require more memory during start-up than during normal operation. Sizing for these peaks will result in very good performance but at a high cost. The performance reserve number is sized to remove most, but not all, start-up peak memory requirements, trading off memory for start-up time. One can choose to accept slower start-up times for smaller performance reserve memory requirements, if desired. The numbers above reflect the memory requirements for normal operations for a minimum configuration system and estimates for a multi-client configuration when the two can be significantly different. Add the memory requirements for the services you want to run concurrently to estimate your total OS/2 Warp Server memory requirements. |                            |                                 |

|                                               |             |              | Free Memory |         |
|-----------------------------------------------|-------------|--------------|-------------|---------|
| Machine                                       | Transport   | Redirector   | DOS 6.3     | DOS 7.0 |
| 80386+                                        | LSP         | Full         | 517         | 537     |
| 80386+                                        | LSP         | Basic        | 533         | 554     |
| 80386+                                        | LSP         | Protect Mode | (1)         | 502     |
| 80386+                                        | DOS NetBEUI | Full         | 506         | 502     |
| 80386+                                        | DOS NetBEUI | Basic        | 556         | 529     |
| 80386+                                        | DOS NetBEUI | Protect Mode | (1)         | 511     |
| 80386+                                        | DOS TCPBEUI | Full         | (1)         | 478     |
| 80386+                                        | DOS TCPBEUI | Basic        | (1)         | 514     |
| 80386+                                        | DOS TCPBEUI | Protect Mode | (1)         | 511     |
| <b>Note:</b><br>(1) Information not available |             |              |             |         |

| OS/2 Warp Server Memory Requirements for OS/2 Clients                                                                                   |                   |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Service                                                                                                                                 | OS/2 Clients (MB) |
| OS/2 Warp Base Operating System                                                                                                         | 4.0               |
| File and Print Client                                                                                                                   | 1.5               |
| File and Print Sharing Services Administration GUI                                                                                      | 4.5 (1)           |
| Remote Access Client                                                                                                                    | 1.5               |
| Systems Management Client — Passive                                                                                                     | 4.0               |
| Systems Management Client — Active                                                                                                      | 8.5               |
| TCP/IP Client                                                                                                                           | 1.5               |
| <b>Note:</b><br>(1) Required only when the LAN Server Administration GUI is running; it will be used for other programs at other times. |                   |

**OS/2 Warp Server Memory Requirements for DOS or Windows File and Print Clients:** The amount of memory needed for DOS or Windows File and Print clients is determined by the size of the applications being used and/or the operating system requirements, if any of the Windows operating systems is used. An important consideration is how much of the memory below 640KB is free after the client is loaded. Refer to the table in **Customer Responsibilities** to estimate this remaining memory based on your configuration of transport, redirector, and DOS version.

To assist customers in planning the configuration of their DOS File and Print Client, the following matrix is provided to show memory options available.

**Note:** The amount of free memory available will vary depending on your specific hardware configuration and which, if any, memory managers are used. The following numbers are representative but should not be considered precise. Relative comparisons of transports, redirectors, and DOS versions can be made.

**Installability:** Interoperability between Novell NetWare and DOS File and Print Client and OS/2 File and Print Client:

Users of DOS File and Print Client and OS/2 File and Print Client workstations can log on to both OS/2 and NetWare servers and access resources available on both servers.

**Technical Support Information:** For details of other OS/2 Warp Server technical information, refer to the WWW home page at URL:

<http://www.austin.ibm.com/pspinfo/>

**Packaging:** OS/2 Warp Server, Version 4 and OS/2 Warp Server Advanced, Version 4 are available in CD-ROM media only. The package includes:

- User's Guide for OS/2 Warp Version 3.0
- OS/2 Warp Server Easy Start publication
- OS/2 Warp Server Up and Running! publication
- Installation 3.5-inch diskette
- Diskette #1 3.5-inch diskette
- OS/2 Warp Server CD-ROM #1
- OS/2 Warp Server CD-ROM #2
- IPLA Booklet
- License Information Booklet
- Registration Pointer Card
- Service and Support flyer
- Proof of Entitlement (Server plus 1 UBF)
- RAID flyer
- SystemView flyer
- Technical Connection flyer
- LAN Server Sourcebook card

IBM LAN Server for Macintosh Version 1.01 is available on 3.5-inch diskette. The package includes the following:

- 3.5-inch diskette
- IPLA Booklet
- License Information Booklet
- Registration information
- Proof of Entitlement
- LAN Server for Macintosh Administrator's Guide

The OS/2 Warp Server FirstStep is available in CD-ROM media only. The package includes:

- User's Guide for OS/2 Warp Version 3.0
- OS/2 Warp Server Easy Start publication
- OS/2 Warp Server Up and Running! publication
- Installation 3.5-inch diskette
- Diskette #1 3.5-inch diskette



- OS/2 Warp Server CD-ROM #1
- OS/2 Warp Server CD-ROM #2
- IPLA Booklet
- License Information Booklet
- Registration Pointer Card
- Service and Support flyer
- Proof of Entitlement (Server plus 10 UBFs)
- RAID flyer
- SystemView flyer
- Technical Connection flyer
- LAN Server Sourcebook card

The separate documentation package includes the following:

- User's Guide for OS/2 Warp Version 3.0
- OS/2 Warp Server Easy Start
- OS/2 Warp Up and Running!

### **Security, Auditability, and Control**

User management is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

## **Ordering Information**

Orders for new licenses will be accepted now.

Shipments will begin February 27, 1996.

To order these programs for order type, specify the order type number, feature number, part number, program name, media, and quantity.

**Program Package:** Program media with documentation.

| Description                    | Feature Number | Part Number | Media             |
|--------------------------------|----------------|-------------|-------------------|
| <b>Order Type 5801-AAR</b>     |                |             |                   |
| OS/2 Warp Server V4            | 0625           | 25H8002     | CD-ROM            |
| OS/2 Warp Server Advanced V4   | 0626           | 25H8030     | CD-ROM            |
| OS/2 Warp Server FirstStep     | 0627           | 28H0074     | CD-ROM            |
| LAN Server for Macintosh V1.01 | 0628           | 28H0081     | 3.5-inch diskette |

**Additional License Copies:** Authorizes the customer who has a program package to make a single copy of the program media and printed documentation.

The authorization is given by providing the customer a Proof of Entitlement for Additional License — with Certificate, which has its own part number and feature number.

| Description                         | Feature Number | Part Number |
|-------------------------------------|----------------|-------------|
| <b>Order Type 5802-AAR</b>          |                |             |
| Additional License with Certificate |                |             |
| OS/2 Warp Server V4                 | 1030           | 25H8007     |
| OS/2 Warp Server Advanced V4        | 1031           | 25H8035     |
| LAN Server for Macintosh V1.01      | 1032           | 28H0082     |

**Additional License Copies — Software Advantage Exhibit:** Authorization to make additional license copies begins on the start date specified in the Software Advantage Agreement. Proof of Entitlement will be provided monthly.

| Description                    | Part Number |
|--------------------------------|-------------|
| <b>Order Type 5802-AAR</b>     |             |
| OS/2 Warp Server V4            | 25H8008     |
| OS/2 Warp Server Advanced V4   | 25H8036     |
| LAN Server for Macintosh V1.01 | 28H0083     |

**UBFs:** An authorization for a number of users or number of resources used or managed is the Proof of Entitlement for UBFs.

| Description                | Feature Number | Part Number |
|----------------------------|----------------|-------------|
| <b>Order Type 5807-AAR</b> |                |             |
| OS/2 Warp Server V4 UBF    |                |             |
| 1-Pack                     | 0259           | 28H0085     |
| 5-Pack                     | 0260           | 28H0086     |
| 10-Pack                    | 0261           | 28H0087     |
| 50-Pack                    | 0262           | 28H0088     |

**UBFs — Software Advantage:** When the Volume Discount Exhibit — Software Advantage for Workstations applies, authorization for use begins on the agreement start date. Continued authorized use is based on the Proof of Entitlement for UBFs subsequently provided to the customer.

| Description                    | Part Number |
|--------------------------------|-------------|
| <b>Order Type 5807-AAR</b>     |             |
| OS/2 Warp Server V4 UBF 1-Pack | 28H0089     |

**Documentation:** Separate documentation with no media.

The following publications are available. To order, contact your IBM representative or call 800-426-7282.

| Title                                                 | Order Number |
|-------------------------------------------------------|--------------|
| <b>OS/2 Warp Server, Version 4 — General Services</b> |              |
| OS/2 Warp Server Version 4 Easy Start booklet         | S25H-8003    |
| OS/2 Warp Server Version 4 Up and Running!            | S25H-8004    |

**ITSO Technical Bulletins (Redbooks):** Customers can order ITSO books by calling 800-879-2755 or by faxing requests to 800-284-4721. Visa and MasterCard are accepted.

Customers can order hardcopy Redbooks individually or in customized sets, called GBOFs, which relate to specific functions of interest. Customers can also order Redbooks in online format on CD-ROM collections, which contain the Redbooks for multiple products.



Following is a list of available Redbooks:

| Title                                                | Order Number |
|------------------------------------------------------|--------------|
| OS/2 Warp Server, Version 4, Volume 1                | SG24-4602    |
| OS/2 Warp Server, Version 4, Volume 2                | SG24-4702    |
| Understanding IBM OS/2 LAN Server Performance Tuning | GG24-4430    |
| Migration to OS/2 LAN Server from NetWare            | GG24-4388    |
| Migration to OS/2 LAN Server from LAN Manager        | GG24-4387    |
| Automating OS/2 LAN Server Administration            | GG24-4442    |
| Experiences with OS/2 LAN Server 4.0                 | GG24-4428    |
| LAN Server 4.0 Interoperability                      | GG24-4447    |

**Program Package Upgrade:** CD-ROM with documentation.

Upgrading to OS/2 Warp Server requires that each client accessing the upgraded server be upgraded to an OS/2 Warp Server UBF.

| Description                                                                     | Feature Number | Part Number |
|---------------------------------------------------------------------------------|----------------|-------------|
| <b>Upgrade To OS/2 Warp Server Advanced, V4 Additional License 1-Pack</b>       |                |             |
| <b>From:</b>                                                                    |                |             |
| OS/2 Warp Server, V4 or LS 3.xE or LS 4.0E and OS/2 2.1 with WIN-OS/2, or later | 0403           | 25H8042     |
| LS 3.xA and OS/2 2.1 with WIN-OS/2, or later                                    | 0404           | 25H7994     |
| LS 4.0A and OS/2 2.1 with WIN-OS/2, or later                                    | 0405           | 25H7996     |
| LAN Distance, SystemView, or any competitive server                             | 0406           | 25H7998     |

**Additional License Copy Upgrade — Software Advantage Exhibit:** Authorization to make additional license copies begins on the start date specified in the Software Advantage Agreement. Proof of Entitlement will be provided monthly.

| Description                                         | Feature Number | Part Number |
|-----------------------------------------------------|----------------|-------------|
| <b>Order Type 5803-AAR</b>                          |                |             |
| <b>Upgrade to OS/2 Warp Server, V4</b>              |                |             |
| <b>From:</b>                                        |                |             |
| LS 3.xE and OS/2 2.1 with WIN-OS/2, or later        | 0377           | 25H8009     |
| LS 4.0E and OS/2 2.1 with WIN-OS/2, or later        | 0378           | 25H8011     |
| LAN Distance, SystemView, or any competitive server | 0379           | 25H8013     |

#### **Upgrade to OS/2 Warp Server Advanced, V4**

##### **From:**

|                                                                                 |      |         |
|---------------------------------------------------------------------------------|------|---------|
| OS/2 Warp Server, V4 or LS 3.xE or LS 4.0E and OS/2 2.1 with WIN-OS/2, or later | 0380 | 25H8037 |
| LS 3.xA and OS/2 2.1 with WIN-OS/2, or later                                    | 0381 | 25H8039 |
| LS 4.0A and OS/2 2.1 with WIN-OS/2, or later                                    | 0382 | 25H8040 |
| LAN Distance, SystemView, or any competitive server                             | 0383 | 25H8041 |

**Additional License Copy Upgrade:** Authorizes the customer who has a program package upgrade to make a single copy of the program media and printed documentation.

The authorization is given by providing the customer a Proof of Entitlement for Additional License — with Certificate, which has its own part number and feature number.

| Description                                                                     | Part Number |
|---------------------------------------------------------------------------------|-------------|
| <b>Order Type 5804-AAR</b>                                                      |             |
| <b>Upgrade To OS/2 Warp Server, V4 Software Advantage</b>                       |             |
| <b>From:</b>                                                                    |             |
| LS 3.xE and OS/2 2.1 with WIN-OS/2, or later                                    | 25H8015     |
| OS/2 4.0E and OS/2 2.1 with WIN-OS/2, or later                                  | 25H8021     |
| LAN Distance, SystemView, or any competitive server                             | 25H8025     |
| <b>Upgrade To OS/2 Warp Server Advanced, V4 Software Advantage</b>              |             |
| <b>From:</b>                                                                    |             |
| OS/2 Warp Server, V4 or LS 3.xE or LS 4.0E and OS/2 2.1 with WIN-OS/2, or later | 25H8043     |
| OS/2 3.xA and OS/2 2.1 with WIN-OS/2, or later                                  | 25H7995     |
| OS/2 4.0A and OS/2 2.1 with WIN-OS/2, or later                                  | 25H7997     |
| LAN Distance, SystemView, or any competitive server                             | 25H7999     |

**UBFs Upgrade:** An authorization for a number of users or number of resources used or managed is the Proof of Entitlement for UBF-Upgrades.

| Description                                                      | Feature Number | Part Number |
|------------------------------------------------------------------|----------------|-------------|
| <b>Order Type 5804-AAR</b>                                       |                |             |
| <b>Upgrade to OS/2 Warp Server, V4 Additional License 1-Pack</b> |                |             |
| <b>From:</b>                                                     |                |             |
| LS 3.xE and OS/2 2.1 with WIN-OS/2, or later                     | 0400           | 25H8014     |
| LS 4.0E and OS/2 2.1 with WIN-OS/2, or later                     | 0401           | 25H8020     |
| LAN Distance, SystemView, or any competitive server              | 0402           | 25H8024     |

| Description                                                                                          | Feature Number | Part Number |
|------------------------------------------------------------------------------------------------------|----------------|-------------|
| <b>Order Type 5808-AAR</b>                                                                           |                |             |
| <b>Upgrade to OS/2 Warp Server, V4 UBF Software Advantage</b>                                        |                |             |
| <b>From:</b>                                                                                         |                |             |
| Any IBM (prior to LAN Server 4.0) or non-IBM LAN requester, LAN Distance Remote, or SystemView Agent | 0078           | 28H0096     |
| OS/2 LAN Server 4.0 requester                                                                        | 0027           | 28H0109     |



**UBF Upgrades — Software Advantage:** When the Volume Discount Exhibit — Software Advantage for Workstations applies, authorization for use begins on the agreement start date. Continued authorization is based on the Proof of Entitlement for UBF-Upgrades subsequently provided to the customer.

| Description | Feature Number | Part Number |
|-------------|----------------|-------------|
|-------------|----------------|-------------|

**Order Type 5808-AAR**

**Upgrade to OS/2 Warp Server, V4  
UBF Software Advantage**

**From:**

Any IBM (prior to LAN Server 4.0) or non-IBM LAN requester, LAN Distance Remote, or SystemView Agent

28H0097

OS/2 LAN Server 4.0 requester

28H0110

**Upgrade Protection (New Product):** The following upgrade protection products are available only under the Software Advantage for Workstations offering:

| Description | Part Number |
|-------------|-------------|
|-------------|-------------|

**Order Type 5809-AAR**

Upgrade Protection for OS/2 Warp Server OTC<sup>1</sup>

28H0075

Upgrade Protection for OS/2 Warp Server QC<sup>2</sup>

28H0076

Upgrade Protection for OS/2 Warp Server Advanced OTC

28H0079

Upgrade Protection for OS/2 Warp Server Advanced QC

28H0080

Upgrade Protection for OS/2 Warp Server UBF OTC

28H0077

Upgrade Protection for OS/2 Warp Server UBF QC

28H0078

<sup>1</sup> One-Time Charge

<sup>2</sup> Quarterly Charge

**Upgrade Protection (Entitled Customers):** Customers who have an active Upgrade Protection contract in place for OS/2 LAN Server will receive OS/2 Warp Server, Version 4 or OS/2 Warp Server Advanced, Version 4 shortly after February 27, 1996.

**Software Advantage  
Upgrade Protection  
Part Number:**

**Will automatically  
receive:**

LAN Server Entry OTC  
(33H7048)

OS/2 Warp Server V4  
(25H8009)

LAN Server Entry QC  
(33H7235)

OS/2 Warp Server V4  
(25H8009)

LAN Server Advanced  
OTC (33H7234)

OS/2 Warp Server  
Advanced V4 (25H8039)

LAN Server Advanced  
QC (33H7047)

OS/2 Warp Server  
Advanced V4 (25H8039)

LAN Server LAN  
Requester OTC  
(28H0034)

OS/2 Warp Server V4  
UBF (28H0097)

LAN Server LAN  
Requester QC  
(28H0035)

OS/2 Warp Server V4  
UBF (28H0097)

## Program Upgrade

The program package upgrade option allows currently licensed users of:

- OS/2 LAN Server Versions 3.x or 4.0 Entry or Advanced and OS/2 2.1 with WIN-OS/2, or later  
or
- LAN Distance, SystemView, or any competitive server  
or
- Any IBM or non-IBM LAN requester, LAN Distance Remote, or SystemView agent

to obtain the new function for a program upgrade charge. The program upgrade to OS/2 Warp Server, Version 4 or OS/2 Warp Server Advanced, Version 4 or OS/2 Warp Server UBF will be available February 27, 1996.

Orders will be accepted February 27, 1996.

These upgrades will be available through IBM Authorized Personal Computer Dealers and Industry Remarketers — Personal Computers certified to market IBM Authorized Advanced Products. The remarketer will require a Proof of License for each upgrade ordered. The original Proof of License is the colored front cover page (inside the hard binder) or the separate Proof of License page in the program package as identified by IBM to the remarketer.

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**Variable Charges Apply:** No

**Limited Warranty:** Yes

**Program Services:** Program services will be available until June 30, 1998.

**Support Line:** The Personal Systems Support Line applies.

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**Higher Education Software Consortium (HESC) Applies:** Yes

HESC Group V per copy charges apply.

### Charges

| Description                                          | Part Number | OTC   | UPC <sup>3</sup> |
|------------------------------------------------------|-------------|-------|------------------|
| <b>OS/2 Warp Server Version 4</b>                    |             |       |                  |
| CD-ROM                                               | 25H8002     | \$629 |                  |
| Additional License                                   |             |       |                  |
| Software Advantage                                   | 25H8008     | 599   |                  |
| Additional License 1-Pack                            | 25H8007     | 599   |                  |
| CD-ROM Upgrade from:                                 |             |       |                  |
| OS/2 3.xE and OS/2 2.1 with WIN-OS/2, or later       | 25H8009     |       | \$399            |
| OS/2 4.0E and OS/2 2.1 with WIN-OS/2, or later       | 25H8011     |       | 309              |
| LAN Distance, SystemView, or any competitive server  | 25H8013     |       | 499              |
| Additional License Upgrade Software Advantage from:  |             |       |                  |
| LAN Server 3.xE and OS/2 2.1 with WIN-OS/2, or later | 25G8015     |       | 369              |
| LAN Server 4.0E and OS/2 2.1 with WIN-OS/2, or later | 25H8021     |       | 279              |
| LAN Distance, SystemView, or any competitive server  | 25H8025     |       | 469              |
| Additional License Upgrade 1-Pack from:              |             |       |                  |
| LAN Server 3.xE and OS/2 2.1 with WIN-OS/2, or later | 25H8014     |       | 369              |
| LAN Server 4.0E and OS/2 2.1 with WIN-OS/2, or later | 25H8020     |       | 279              |
| LAN Distance, SystemView, or any competitive server  | 25H8024     |       | 469              |

| Description                                                                         | Part Number | OTC     | UPC   |
|-------------------------------------------------------------------------------------|-------------|---------|-------|
| <b>OS/2 Warp Server Advanced Version 4</b>                                          |             |         |       |
| CD-ROM                                                                              | 25H8030     | 1,299   |       |
| Additional License                                                                  |             |         |       |
| Software Advantage                                                                  | 25H8036     | \$1,269 |       |
| Additional License 1-Pack                                                           | 25H8035     | 1,269   |       |
| CD-ROM Upgrade from:                                                                |             |         |       |
| OS/2 Warp Server V4 or LAN Server 3.xE or 4.0E and OS/2 2.1 with WIN-OS/2, or later | 25H8037     |         | \$899 |
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| LAN Server 4.0A and OS/2 2.1 with WIN-OS/2, or later                                | 25H8040     |         | 499   |
| LAN Distance, SystemView, or any competitive server                                 | 25H8041     |         | 899   |
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| OS/2 Warp Server V4 or LS 3.xE or 4.0E and OS/2 2.1 with WIN-OS/2, or later         | 25H8043     |         | 869   |
| LAN Server 3.xA and OS/2 2.1 with WIN-OS/2, or later                                | 25H7995     |         | 769   |
| LAN Server 4.0A and OS/2 2.1 with WIN-OS/2, or later                                | 25H7997     |         | 469   |
| LAN Distance, SystemView, or any competitive server                                 | 25H7999     |         | 869   |
| Additional License Upgrade 1-Pack from:                                             |             |         |       |
| OS/2 Warp Server V4 or LAN Server 3.xE or 4.0E and OS/2 2.1 with WIN-OS/2, or later | 25H8042     |         | 869   |
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| LAN Server 4.0A and OS/2 2.1 with WIN-OS/2, or later                                | 25H7996     |         | 469   |
| LAN Distance, SystemView, or any competitive server                                 | 25H7998     |         | 869   |
| <b>OS/2 Warp Server UBF</b>                                                         |             |         |       |
| UBF Software Advantage                                                              | 28H0089     | 49      |       |
| UBF 1-Pack                                                                          | 28H0085     | 49      |       |
| UBF 5-Pack                                                                          | 28H0086     | 229     |       |
| UBF 10-Pack                                                                         | 28H0087     | 439     |       |
| UBF 50-Pack                                                                         | 28H0088     | 1,959   |       |
| UBF Upgrade Software Advantage                                                      | 28H0097     |         | 20    |
| UBF Upgrade from LS4.0 Requester Software Advantage                                 | 28H0110     |         | 12    |
| UBF Upgrade                                                                         | 28H0096     |         | 20    |
| UBF Upgrade from LS4.0 Requester                                                    | 28H0109     |         | 12    |
| <sup>3</sup> Upgrade Protection Charge                                              |             |         |       |



| Description                                | Part<br>Number | OTC   |
|--------------------------------------------|----------------|-------|
| <b>OS/2 Warp Server FirstStep</b>          |                |       |
| OS/2 Warp FirstStep<br>(Server and 10 UBF) | 28H0074        | \$829 |

**OS/2 Warp Server Upgrade Protection**

|                     |         |       |
|---------------------|---------|-------|
| Server OTC          | 28H0075 | 239   |
| Server QC           | 28H0076 | 29.88 |
| Server Advanced OTC | 28H0079 | 379   |
| Server Advanced QC  | 28H0080 | 47.38 |
| Server UBF OTC      | 28H0077 | 15    |
| Server UBF QC       | 28H0078 | 1.88  |

**IBM LAN Server for Macintosh V1.01**

|                                          |         |     |
|------------------------------------------|---------|-----|
| Program Package                          | 28H0081 | 299 |
| Additional License 1-Pack                | 28H0082 | 269 |
| Additional License<br>Software Advantage | 28H0083 | 269 |

**Support Line for OS/2 Warp Server or OS/2 Warp Server Advanced, Version 4:** \$2,495 (OTC)

**Additional Licenses Charge:** Customers who pay an OTC for additional licenses may copy machine-readable program materials and printed documentation previously acquired from IBM in a program package. One copy may be made for each additional license ordered.

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**Program Upgrade Charge:** A program upgrade charge will apply for upgrades to OS/2 Warp Server, Version 4 or OS/2 Warp Server Advanced, Version 4 or OS/2 Warp Server UBF from:

- OS/2 LAN Server Versions 3.x or 4.0 Entry or Advanced plus OS/2 2.1 with WIN-OS/2, or later  
*or*
- LAN Distance, SystemView, or any competitive server  
*or*
- Any IBM or non-IBM LAN requester, LAN Distance Remote, or SystemView agent

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**Note:** Shipments will begin after the planned availability date.

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